

CLAIMS

What is claimed is:

1. A wiring error detection circuit, comprising:
 - a first resistor connected in series with an AC line;
 - a diode connected in series with the first resistor;
 - a transistor including a base, an emitter and a collector, the collector connected to an AC neutral;
 - a first light emitting diode (LED) connected between the diode and the emitter of the transistor;
 - a second resistor connected between the emitter and the base of the transistor;
 - a third resistor connected between the base of the transistor and a ground;
 - a capacitor connected between the AC line and the AC neutral;
 - a zener diode connected in series with the AC line; and
 - a second LED connected between the zener diode and the AC neutral.
2. The wiring error detection circuit of claim 1, wherein the first LED and the second LED indicate a wiring problem in an AC outlet to which the circuit is connected when the first LED and the second LED are illuminated.
3. The wiring error detection circuit of claim 1, wherein the first LED indicates the presence of an AC outlet's ground to which the circuit is connected when the first LED is illuminated by itself.
4. The wiring error detection circuit of claim 1, wherein the second LED indicates the absence of an AC outlet's ground to which the circuit is connected when the second LED is illuminated by itself.

5. The wiring error detection circuit of claim 1, further comprising:

a fourth resistor connected to the ground;

a third LED connected to a coaxial connector; and

a second diode connected between the fourth resistor and the third LED.

6. The wiring error detection circuit of claim 5, wherein the third LED indicates a wiring problem in an AC outlet to which the circuit is connected when the third LED is illuminated.

7. The wiring error detection circuit of claim 1, wherein the circuit is included in an electronic device that is equipped to connect to an AC outlet.

8. A wiring error detection circuit, comprising:

a means for indicating a wiring problem in an AC outlet to which the circuit is connected;

a means for indicating the presence of an AC outlet's ground to which the circuit is connected; and

a means for indicating the absence of an AC outlet's ground to which the circuit is connected.

9. A power line surge protection device, comprising:

an AC plug comprising a first conductor for connection to an AC line, a second conductor for connection to an AC neutral, and a third conductor for connection to a ground; at least one female outlet, each outlet comprising a first, a second, and a third conductor connected, respectively, to the first, the second, and the third conductors of the AC plug; and a wiring error detection circuit.

10. The power line surge protection device of claim 9, wherein the wiring error detection circuit indicates a wiring problem in an AC outlet to which the device is connected.

11. The power line surge protection device of claim 9, wherein the wiring error detection circuit indicates the presence of an AC outlet's ground to which the device is connected.
12. The power line surge protection device of claim 9, wherein the wiring error detection circuit indicates the absence of an AC outlet's ground to which the device is connected.
13. The power line surge protection device of claim 9, further comprising:
an AC overvoltage protection circuit for protecting an AC line from overvoltage conditions.
14. The power line surge protection device of claim 13, wherein the overvoltage protection circuit is connected between the AC plug and at least one female outlet.
15. The power line surge protection device of claim 9, further comprising:
a high speed data line overvoltage and overcurrent protection circuit for protecting a high speed data line from overvoltage and overcurrent conditions.
16. The power line surge protection device of claim 15, wherein the overvoltage and overcurrent protection circuit is connected between a plurality of RJ-45 jacks.
17. The power line surge protection device of claim 15, wherein the overvoltage and overcurrent protection circuit is connected between a plurality of USB ports.
18. The power line surge protection device of claim 9, further comprising:
a telephone line overvoltage and overcurrent protection circuit for protecting a telephone line from overvoltage and overcurrent conditions.
19. The power line surge protection device of claim 18, wherein the overvoltage and overcurrent protection circuit is connected between a plurality of RJ-11 jacks.
20. An AC surge suppression board, comprising:

a wiring error detection circuit for providing the status of the wiring of an AC outlet and the status of the AC outlet's ground connection;

an AC overvoltage protection circuit for protecting an AC line from overvoltage conditions; and

a switch for turning the surge suppression board on and off.

21. A grounding module, comprising:

a housing;

an AC plug, the plug comprising a first conductor for connection to an AC line, a second conductor for connection to an AC neutral and a third conductor for connection to a ground;

at least one female outlet, the outlet comprising a first, a second, and a third conductor connected, respectively, to the first, the second and the third conductors of the AC plug;

a wiring error detection circuit for providing the status of the wiring of an AC outlet when the AC plug is inserted into the AC outlet; and

at least one external ground connection connected to the ground for providing the ground to an electrical device.

22. The grounding module of claim 21, wherein the wiring error detection circuit indicates that there is a wiring problem in an AC outlet to which the module is connected by illuminating a first LED and a second LED.

23. The grounding module of claim 21, further comprising:

a screw for securing a grounding wire from an electrical device to the grounding module.

24. The grounding module of claim 21, further comprising:

a means for securing a grounding wire from an electrical device to the grounding module.

25. The grounding module of claim 21, further comprising:

an AC overvoltage protection circuit for protecting against overvoltage conditions appearing on the AC line.

26. The grounding module of claim 25, further comprising:

a third LED for indicating whether or not an AC overvoltage condition exists.

27. The grounding module of claim 21, wherein the AC plug is disposed within the housing.

28. The grounding module of claim 21, wherein the AC plug is connected to the grounding module via a power chord.

29. The grounding module of claim 21, further comprising:

at least one coaxial connector connected to the ground for providing the ground to a device comprising a coaxial cable.

30. The grounding module of claim 29, wherein the coaxial connector is a female F-type coaxial connector.

31. The grounding module of claim 21, further comprising:

a fourth LED for indicating the presence of a wiring problem in the AC outlet.

32. The grounding module of claim 31, wherein the problem in the AC outlet results from reversed AC line and AC neutral wiring.

33. The grounding module of claim 21, wherein the presence of an AC outlet's ground to which the module is connected is indicated by illuminating the first LED by itself.

34. The grounding module of claim 21, wherein the absence of an AC outlet's ground to which the module is connected is indicated by illuminating the first LED by itself.